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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/CEMENT/2016-17 Date: 23.05.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer**, Yelahanka New Town Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
*NAME OF THE WORK	:	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
*REFERENCE	:	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	21.05.2016
PERIOD OF TESTING	:	21.05.2016 to 23.05.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	140 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	480 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/SAND-Gradation/2016-17 : 23.05.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
* Name of Work	: Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	: EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Technical Reference	: IS : 2386 Part 1 - 1963 RA-2007
Sample ID	: Fine Aggregates
Sample Received on	: 21.05.2016
Date of Testing	: 23.05.2016

Total Wt. of Aggregates in gms 1000

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	94.00	90-100	90-100	90-100	95-100
2.36	75.80	60-95	75-100	85-100	95-100
1.18	53.80	30-70	55-90	75-100	90-100
600 Micron	27.30	15-34	35-59	60-79	80-100
300 Micron	12.30	5-20	8-30	12-40	15-50
150 Micron	3.40	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/AGG/GR/2016-17 : 23.05.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
* Name of Work	: Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
* Reference	: EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (20mm)
Sample Received on	: 21.05.2016
Date of Testing	: 23.05.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS :383-1970 (RA- 2007)	
		Graded	Single Sized
40	100	100	100
20	97.30	95-100	85-100
10	33.30	25-55	0-20
4.75	3.30	0-10	0-5

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

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Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/CC Solid Block/2016-17 : 25.05.2016

TEST REPORT ON SOLID CONCRETE BLOCKS

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
* Name of the Work	: Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	: EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Sample Received on	: 21.05.2016
Date of Testing	: 25.05.2016
Size of Blocks	: 400mm x 200mm x 200mm
Cross Sectional Area	: 80000 mm^2
Technical Reference	: IS: 2185 (Part 1) - 2005
No. of Blocks Tested	: 08

Sl.No.	Block ID	Wt. in Kg	Failure load (KN)	Compressive strength (N/mm^2)	Requirement as per IS 2185 (Part 1) - 2005
1	Block 1	34.25	258.2	3.23	Minimum required Compressive Strength of Individual Units 3.20 N/mm^2
2	Block 2	35.20	259.3	3.24	
3	Block 3	34.26	260.2	3.25	
4	Block 4	35.15	261.2	3.27	
5	Block 5	34.19	262.5	3.28	
6	Block 6	35.16	263.1	3.29	
7	Block 7	34.89	258.5	3.23	
8	Block 8	34.25	259.8	3.25	

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Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/CC Solid Block/2016-17 : 25.05.2016

TEST REPORT ON SOLID CONCRETE BLOCKS

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
* Name of the Work	: Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	: EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Sample Received on	: 21.05.2016
Date of Testing	: 25.05.2016
Size of Blocks	: 400mm x 100mm x 200mm
Cross Sectional Area	: 40000 mm^2
Technical Reference	: IS: 2185 (Part 1) - 2005
No. of Blocks Tested	: 08

Sl.No.	Block ID	Wt. in Kg	Failure load (KN)	Compressive strength (N/mm^2)	Requirement as per IS 2185 (Part 1) - 2005
1	Block 1	17.56	128.3	3.21	Minimum required Compressive Strength of Individual Units 3.20 N/mm^2
2	Block 2	18.25	129.5	3.24	
3	Block 3	17.86	130.2	3.26	
4	Block 4	18.25	131.2	3.28	
5	Block 5	17.96	130.2	3.26	
6	Block 6	18.25	129.4	3.24	
7	Block 7	18.28	132.2	3.31	
8	Block 8	17.83	129.6	3.24	

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Job No.: CTCE/BBMP/W.No.04/AGR/CSR-05/045h/Kerb stone/2016-17 25.05.2016

TEST REPORT ON CONCRETE CORE (KERB STONE)

* Name of Customer	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Name of Agency	:	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
* Name of work	:	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	:	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Techinical Reference	:	IS:516-1959 (Reaffirmed 2008), SP-24:1983.
Sample ID	:	Kerb Stone
Sample Received on	:	21.05.2016
Date of Testing	:	25.05.2016

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	78.00	0.384	2507.30	1.56	0.955	25.00	12.73	13.75	13.13	16.42
2	50.00	79.00	0.390	2514.25	1.58	0.960	26.00	13.24	14.30	13.73	17.16
3	50.00	80.00	0.399	2540.11	1.60	0.965	26.80	13.65	14.74	14.23	17.78

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.04/AGR/WMM/AIV/2016-17 16.06.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
Name of the Work	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	16.06.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	89	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	302	
4	Aggregate Impact value = percent fines	22.88	22.96	
	100* (W_2/W_1)%			22.52

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.04/AGR/WMM/S-T/2016-17 16.06.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
Name of Work	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
Reference	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	16.06.2016

Result : Flakiness Index = **12.35%**

Elongation Index = **13.90%**

Result : Combined Flakiness & Elongation index **26.25%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.04/AGR/SDBC/Bit/2016-17 25.06.2016

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CUSTOMER	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
AGENCY	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
NAME OF THE WORK	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
REFERENCE	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
SAMPLE I/D	Roads in A sector in Ward No.04, BBMP, Bangalore.
DATE OF TESTING	25.06.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	478	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22	23.00
7. Bitumen content in %	4.40	4.60
8. Average	4.50	

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Job No.: CTCE/BBMP/W.No.04/AGR/SDBC/Bit/2016-17 25.06.2016

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
AGENCY	**Mr. A. Gangula Reddy,** No.490/B, 12th C Cross Road, Vyalikaval, Bangalore.
NAME OF THE WORK	Improvements to drains and asphalting to main and cross roads in A sector in Ward No.04, BBMP, Bangalore.
REFERENCE	EE(Y.N.K.D)/E-PMT-3/W.O/77/2016-17 Dated: 20.05.2016
SAMPLE I/D	Roads in A sector in Ward No.04, BBMP, Bangalore.
DATE OF TESTING	25.06.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	26.32	5.51	5.51	94.49	90-100
4.75	263.2	55.06	60.57	39.43	35-51
2.36	59.21	12.39	72.96	27.04	24-39
1.18	42.36	8.86	81.82	18.18	15-30
0.3	35.16	7.36	89.17	10.83	9-19
0.075	31.22	6.53	95.71	4.29	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	33.26	6.97	6.97	93.03	90-100
4.75	269.6	56.52	63.49	36.51	35-51
2.36	59.33	12.44	75.93	24.07	24-39
1.18	35.25	7.39	83.32	16.68	15-30
0.3	30.22	6.34	89.66	10.34	9-19
0.075	25.15	5.27	94.93	5.07	3-8

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